[0054] FIG. **2** is a plan view illustrating essential parts of a PCB **10***a* according to an example embodiment.

[0055] Referring to FIG. **2**, the PCB **10***a* includes a base substrate **12** and a connection line **20** formed on the base substrate **12**. The base substrate **12** included in the PCB **10***a* may include the bending region BR having edges **12**E on both sides thereof and mounting regions DR extending from both ends of the bending region BR.

[0056] The bending region BR is a portion of the PCB **10***a* corresponding to a portion of the electronic apparatus **1** (see FIG. **1**) including the PCB **10***a* that is repeatedly bent. The bending region BR is a part of the base substrate **12**, and thus the edges **12**E of the bending region BR may also be the edges **12**E of the base substrate **12**.

[0057] Each or at least one of the mounting regions DR may include a device mounting portion **100**R on which the device **100** (see FIG. **1**) is mounted. The connection line **20** may extend to the device mounting portion **100**R, and may be electrically connected to the device **100** (see FIG. **1**) mounted on the device mounting portion **100**R.

[0058] Although the mounting region DR extending from each or at least one of both ends of the bending region BR includes one device mounting portion **100**R, the example embodiment is not limited thereto. A plurality of the device mounting portions **100**R may be formed according to the number of the devices **100** (see FIG. **1**) included in the electronic apparatus **1** (see FIG. **1**), and in this case, the connection line **20** may connect one device mounting portion **100**R and at least another device mounting portion **100**R.

[0059] That is, although the connection line **20** crosses the bending region BR and connects the device mounting portions **100**R of two mounting regions DR extending from both ends of the bending region BR from among various connection lines formed on the base substrate **12**, the connection line **20** included in the electronic apparatus **1** may be designed and arranged in various ways (see FIG. **1**). The number of the connection lines **20** that connect two device mounting portions **100**R may vary according to a type of the device **100** (see FIG. **1**) mounted on each device mounting portion **100**R. Also, although each or one of both sides of the connection line **20** formed on the bending region BR is connected to one device mounting portion **100**R, the example embodiment is not limited thereto and the connection line **20** formed on the bending region BR may be designed to extend and be connected to the mounting region DR in various ways.

[0060] When the connection line **20** is connected to the device mounting portion **100**R, the connection line **20** extends into the device mounting portion **100**R in order to be electrically connected to the device **100** mounted on the device mounting portion **100**R. Accordingly, an arrangement and a shape of the connection line **20** in the device mounting portion **100**R may vary according to the device **100** mounted on the device mounting portion **100**R, and thus the arrangement and the shape of the connection line **20** in the device mounting portion **100**R are not shown.

[0061] Although the connection line **20** may be formed on a top surface, a bottom surface, or both the top surface and the bottom surface of the base substrate **12**, the example embodiment is not limited thereto and the connection line **20** may be formed in the base substrate **12**.

[0062] The base substrate **12** may include an opening **30***a* formed in the bending region BR. The opening **30***a* may be formed adjacent to each or at least one of both edges **12**E of the bending region BR. For example, the opening **30***a* may be formed to contact each or at least one of both edges **12**E of the bending region BR. The openings **30***a* adjacent to both edges **12**E of the bending region BR may face each other. The openings **30***a* adjacent to both edges **12**E of the bending region BR may be substantially symmetric about a central line between both edges **12**E of the bending region BR. The opening **30***a* may be located on a virtual bending central line BC that connects both edges **12**E of the bending region BR.

[0063] The virtual bending central line BC refers to a virtual line that connects portions of the bending region BR on which the largest deformation, that is, the largest compression and/or tension, of the PCB **10***a* occurs when the electronic apparatus **1** (see FIG. **1**) including the PCB **10***a* is repeatedly bent during use.

[0064] The opening **30***a* may be recessed from each or at least one of both edges **12**E of the base substrate **12**, that is, from each or at least one of both edges **12**E of the bending region BR. A boundary of the opening **30***a* may have an arc shape. The boundary of the opening **30***a* may have, for example, an arc shape with an angle of about 180° or less. When the boundary of the opening **30***a* has an arc shape, it means that the boundary of the opening **30***a* on the top surface or the bottom surface of the base substrate **12** has an arc shape. That is, the boundary of the opening **30***a* may have an arc shape on a side surface of the base substrate **12**.

[0065] A guard pattern **32***a* may be formed along the boundary of the opening **30***a* on the top surface and/or the bottom surface of the base substrate **12**. The guard pattern **32***a* may have a substantially constant width along the boundary of the opening **30***a*.

[0066] The guard pattern **32***a* may be formed of or include a material that is different from the material of the base substrate **12**. The guard pattern **32***a* may be formed of or include, but is not limited to, the same material as the material of the connection line **20**. The guard pattern **32***a* may be formed of or include, for example, an ED copper foil, an RA copper foil, a stainless steel foil, an aluminum foil, an ultra-thin copper foil, sputtered copper, or a copper alloy.

[0067] When an electronic apparatus **1** including a PCB is repeatedly bent, cracks may occur on a portion of the PCB on which stress caused by fatigue is concentrated. Also, the cracks may propagate into a base substrate to short a connection line, thereby reducing the reliability of the electronic apparatus.

[0068] However, in the PCB **10***a* according to the example embodiment, since the opening **30***a* is formed along each or at least one of both edge **12**E on the virtual bending central line BC on which stress caused by fatigue is concentrated, stress may be distributed to the boundary of the opening **30***a*, thereby substantially preventing cracks from occurring. Accordingly, the connection line **20** may be substantially prevented from being shorted, thereby improving the reliability of the electronic apparatus **1** including the PCB **10***a*.

[0069] Also, since the guard pattern **32***a* that is formed of or include a material that is different from the material of the base substrate **12** is formed on the top surface and/or the bottom surface of the base substrate **12** along the boundary of the opening **30***a*, even when cracks occur on a portion of the base substrate **12**, the cracks may be substantially